

**Final Report from Joint Public Advisory
Committee workshop**

**“Reducing Ecosystem Vulnerability,
Responding to Community Needs: Tools
and Information for North American
Action”**

**13–14 December 2012
Mérida, Yucatán, Mexico**

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Executive Summary: Principal Recommendations from the Workshop

In the framework of its third ordinary session of 2012, the Joint Public Advisory Council (JPAC) of the Commission for Environmental Cooperation (CEC) hosted a workshop entitled “Reducing ecosystem vulnerability, responding to community needs: tools and information for North American action” on 13–14 December 2012 in Mérida, Yucatán, Mexico, with participation by experts and citizens from Canada, the United States and Mexico.

Following is a list of the main recommendations from the workshop.

<p>Tools and information adopted for reducing ecosystem vulnerability and responding to community needs may be disseminated more widely through institutions and organizations in the three countries and at various levels.</p>
<p>Capacities for adapting or responding to vulnerability factors requires tools and information that are accessible and suitable for the conditions characterizing the various stakeholders at each level of management and decision-making, and thus the following should be taken into consideration:</p> <ul style="list-style-type: none">– national languages and indigenous languages;– language appropriate for each setting (subnational and local governments, businesses, organizations, citizens);– accessible formats with simple technologies.
<p>The response to vulnerability factors will be more efficient if both the available information and channels of communication among peers and between different settings are increased. It is important to inform but also to empower—for communicating and building consensus and co-responsibility.</p>
<p>Networking is more effective and less costly when it is promoted from civic and local organizations. It can be fomented through small donations and schemes for channeling revenue from fines and compensations to social action.</p>
<p>It is necessary to direct resources toward building capacities in local responses to vulnerability factors.</p>
<p>Elevating capacities for responding to vulnerability factors requires influencing contents and practices in the educational system.</p>
<p>At each level of management and decision-making, tools are needed for identifying risks and aspects requiring monitoring (red flags and priorities) in response to vulnerability factors.</p>
<p>In North America there are territories that, while not located along borders, are considered “borders” because they are subject to socioeconomic processes and pressures characteristic of border areas (for example, Cancún).</p>
<p>It is important to address key issues in the paradigms and models of management and response:</p> <ul style="list-style-type: none">– to overcome the apparent contradiction between scientific knowledge and traditional knowledge, in order to incorporate the best of both;– to move beyond a sector-based perspective that makes it difficult to find comprehensive (economic-health-environment) responses.
<p>It is important to move forward in the harmonization of regulatory aspects and standards in the region, in areas such as: toxic substances, fuel quality and the disposal of hazardous wastes (for example, batteries and energy-saving light bulbs).</p>

Background

On 13-14 December 2012 the Joint Public Advisory Committee (JPAC) of the Commission for Environmental Cooperation (CEC) held a workshop entitled “Reducing ecosystem vulnerability, responding to community needs: tools and information for North American action” in Mérida, Yucatán, Mexico. The workshop was open to the public, and addressed the topics of the resilience and vulnerability of ecosystems and communities.

Some months earlier, JPAC had organized a preliminary meeting in New Orleans, Louisiana, USA in the form of a public workshop on the same topic, resulting in a document entitled “Resilient Future: Voices of North Americans on Policy and Action.” This document provides guidelines for assisting local and government leaders in adopting measures in response to critical problems affecting communities in North America and other regions of the world.

The current document presents the results of the workshop held in Mérida, as a continuation of the event in New Orleans, with the aim of discussing and exploring options for reducing communities’ vulnerability and reviewing tools that may be useful in the work carried out in different ecosystems.

Workshop Objectives

- Analyze factors that make ecosystems and communities vulnerable.
- Become familiar with tools for evaluating vulnerability, mapping changes and stressors, and improving environmental health.
- Identify actions for improving and disseminating tools.
- Propose actions for reducing communities’ vulnerability to environmental phenomena.

Agenda

Thursday, 13 December 2012

Time	Activity
8:00-9:00	Registration of participants (Salón Yucatán 1)
9:00-9:30	Opening and introductory remarks <ul style="list-style-type: none">• Eduardo Batllori Sampedro, Secretary of Urban Development and Environment of the State of Yucatán• Irasema Coronado, Executive Director, Commission for Environmental Cooperation (CEC)• Martín Gutiérrez Lacayo, JPAC Chair for 2012
9:30-9:45	Presentation of objectives, methodology and participants , by Francisco Padrón Gil, Director, Mexican Initiative for Conservation Learning (<i>Iniciativa Mexicana de Aprendizaje de la Conservación—IMAC</i>)

9:45-13:30	Ecosystem vulnerability
9:45-10:05	Keynote presentation Elizabeth Smith , Associate National Program Director, Sustainable and Healthy Communities Research Program, US EPA
10:05-10:30	Question and answer period
10:30-11:30	Presentations: The impact of increased ecosystem vulnerability on the livelihoods and health of communities in North America <i>Panelists:</i> <ul style="list-style-type: none"> • Evelia Rivera Arriaga, Secretary of Environment and Sustainable Development of the State of Campeche, Mexico • Chief Carl Sidney, Chief Executive Officer of the Teslin Tlingit Council, Yukon, Canada • Albert W. Miller, Commissioner, Jeff Davis County, USA
11:30-11:45	Break
11:45-13:30	Dialogue between panelists and public on their perceptions of increased ecosystem vulnerability and its impact on the livelihoods and health of communities in North America
13:30-14:30	Lunch [provided] (<i>Salón Yucatán 3 and Salón Yucatán 4</i>)
14:30-14:50	Presentation: Framework for capacity building to improve the health of vulnerable communities in North America , by Orlando Cabrera, CEC Program Manager, Air Quality and PRTR
14:50-15:00	Question and answer period
15:00-16:15	Group work to generate feedback on framework document <ul style="list-style-type: none"> ▪ What are the opportunities and the most effective ways to distribute the framework document to all of North America? ▪ What are the potential applications (tools, guides, etc.) of the framework? ▪ What tools are needed to reduce human vulnerability to chemical pollution? ▪ What are the challenges that tool developers may face with the creation of these tools?
16:15-16:30	Break
16:30-18:00	Group exercise: Tools to map and identify vulnerable systems (natural and human) and to estimate future change Introduction by Karen Richardson, Program Manager, Terrestrial and Marine Ecosystems Group work <ul style="list-style-type: none"> ▪ Geographic areas undergoing large amounts of change ▪ Factors generating change ▪ Factors that can already be measured and factors for which data are needed ▪ Different ways to integrate stressors and conditions <ul style="list-style-type: none"> ▪ Ways to visualize possible future conditions
18:00	Wrap-up by Francisco Padrón Gil

Friday, 14 December 2012	
Time	Activity
9:00-10:30	Group work: The main objectives of the session will be to develop proposals for actions and to strengthen the ability of North Americans to identify vulnerable ecosystems and human communities, including an assessment of access to current information and needs to improve access. Proposals to include actions for individuals and for local and federal governments.
10:30-10:45	Break
10:45-12:45	Submission of proposals for action , by rapporteurs and facilitator
12:45-13:00	Conclusions , by facilitator and JPAC Chair
13:00-13:15	Report by representatives of the national and governmental advisory committees (NAC and GAC)
13:15-13:30	Update on JPAC work and administrative matters <ul style="list-style-type: none">▪ Election of JPAC Chair for 2013▪ JPAC priorities for 2013 and next meetings
13:30	Closing
13:30-14:30	Lunch [provided] (<i>Salón Yucatán 3</i>)

Workshop Activities: Thursday, 13 December 2012

Opening and presentation of objectives, methodology and participants

The session began with some welcoming and introductory remarks from the Secretary of Urban Development and Environment of the Yucatán state government, Eduardo Batllori Sampedo. Then, the new CEC Executive Director, Irasema Coronado, also welcomed participants and thanked them for attending the workshop. Lastly, the JPAC Chair for 2012, Martín Gutiérrez Lacayo, highlighted the importance of listening to communities and making recommendations to authorities.

Next, the workshop facilitator, Francisco Padrón Gil, presented the objectives, agenda and dynamics of the workshop, and also proposed a series of principles for working together, in the interest of a productive workshop.

Participants agreed on the following principles for working together:

- Everyone participates.
- Everyone listens attentively.
- Participants' positions and titles are left at the door.
- Comments should be brief and constructive.
- It is necessary to raise one's hand to ask to speak.
- Verbal and body language must be respectful.
- Participants must place their cell phones on the "vibrate only" mode and answer them outside the room.
- Punctuality.

Keynote presentation

The keynote presentation was given by Elizabeth Smith, Associate National Program Director of the Sustainable and Healthy Communities Research Program of the US Environmental Protection Agency (EPA).

Smith pointed to the importance of incorporating a number of perspectives when addressing the issue of communities' vulnerability and environmental changes. She also underscored the impact from pollution and climate changes as triggering factors.

She emphasized the usefulness of geomapping that includes spatial data for vulnerability studies, and mentioned the example of the US environmental atlas (EnviroAtlas) used by the department where she works. She said that consideration is given to possible scenarios of "what would happen if..." for the purpose of confronting future environmental changes and natural disasters. She also indicated that geomapping may be used at national and regional levels, and that this workshop was playing a key role in linking online resources, such as EnviroAtlas, with individuals having direct experience in communities.

Her presentation in Powerpoint may be consulted at:

www.slideshare.net/CECOnline/ppresentation-from-elizabeth-smith-ecosystem-vulnerability-assessment-approaches-from-epas-regional-vulnerability-assessment-reva-program.

Presentations: The impact of increased ecosystem vulnerability on the livelihoods and health of communities in North America

The first presentation was given by Evelia Rivera, the Secretary of Environment and Sustainable Development in the state of Campeche. She talked about the vulnerability of coastal and marine areas; emphasized the links among coastal, marine and terrestrial ecosystems; and acknowledged the importance of their comprehensive management for communities' continued existence. Rivera pointed to the importance of being prepared for extreme environmental phenomena, and evaluating the impacts from different human activities in order to analyze the necessary adaptation.

Then, Chief Carl Sidney, who is the Chief Executive Officer of the Teslin Tlingit Council Yukon in Canada, spoke about the changes experienced in his region and mentioned the various problems resulting from climate change, overpopulation and trash.

The last presentation was given by Albert W. Miller, who is the Jeff Davis County Commissioner. He spoke about the pressure experienced by the communities in his county due to the fragmentation of habitats and the presence of invasive species, as well as the desertification of grasslands.

Following the presentations, participants divided into work groups, to generate questions and comments to be presented to the panel.

Group work

With the aim of initiating dialogue between panelists and the public, participants were divided into groups, taking care to include representatives of all sectors, organizations and countries in each group.

In order to increase the effectiveness of these efforts, three key players were selected in each group:

- *Moderator*: responsible for indicating permission to speak, encouraging everyone's participation and guaranteeing that good use is made of the capacities of all those present.
- *Rapporteur*: responsible for recording preliminary and final results, as well as agreements reached by teams.
- *Time-keeper*: person designated to calculate the distribution of time among the various tasks and maintain the team informed regarding the use of time.

The tasks carried out by each working group were the following:

- Introductions, giving name and activity.
- Selecting moderator and rapporteur.
- Naming time-keeper.
- Generating questions and comments regarding the presentations by panelists.

Next, a plenary question-and-answer session was held, generating the following comments and questions for panelists.

Group 1

Questions

1. Given that not all the impacts from an activity can be economically compensated for, what are the challenges for resolving the problems that arise from communities' demands for their lands?
2. To what degree are communities becoming interested in access to information and education for resolving their environmental problems?
3. How can the adopted tools be made more accessible so that communities apply them correctly?

Group 2

Questions

FOR EVELIA RIVERA

1. What strategies are being used for making known the effects from climate change in communities?
2. How effective are public policies (for example, for genetically-modified organisms and coastal development) and how are they being carried out?

FOR CARL SIDNEY

1. Have health effects derived from pollution (malformations, reproductive problems, chronic illnesses) been observed in communities?

FOR ELIZABETH SMITH

1. Can the EPA influence federal policies in order to diminish the purchase of petroleum extracted through methods that cause greater environmental impact?

FOR ALBERT MILLER

1. What have communities experienced in relation to the hydraulic fracturing taking place in the county? Can you share the knowledge generated in this regard?

Comments

FOR CARL SIDNEY

1. Your community should continue to participate in order to interest other communities in environmental protection.

FOR EVELIA RIVERA

1. Policies are contradictory because on the one hand, they protect the environment, and on the other hand, they permit oil platforms, massive tourism, etc.

Group 3

Comments

1. It is suggested that an example be given of an environmental threat or stressor that makes the state of Campeche vulnerable.
2. It would be good to mention a mechanism for assuring that developers comply with legislation.
3. It is important to expand the information on the participation of civil society in resolving problems associated with its environmental resources.

Questions

1. What have we learned from living in extreme conditions that can help us adapt to impacts from climate change? Taking into consideration the sustainable use of wildlife resources, what forms of organization can be adopted by communities?
2. Is it possible to develop human resources dedicated exclusively to disseminating information among vulnerable communities?
3. What would the lines of municipal public policy need to be in order to promote binational or trinational agreements in the shortest time frame possible?

Group 4

Questions

1. What are the legislative initiatives for achieving resilience at the local level in situations characterized by climate change? Are there quick, efficient initiatives for each country?
2. From a multicultural perspective, how can we communicate ecosystem vulnerabilities in such a way that behaviors are modified throughout the spheres of decision-making at local, regional, national and global levels?
3. How can we share ideas and experiences in a generalized way in order to enrich our understanding and participation in terms of reducing ecosystem vulnerability from a multicultural perspective?
4. How can we convince communities to discontinue some of their traditional practices in order to confront climate change?

5. What degree of information exchanging have we achieved? Are rural communities already concerned about resilience and climate change, as well as the urgency of confronting these issues? How much do they know about this?
6. Which environmental policies are necessary (or which ones must be changed) in order to achieve and maintain goals?
7. Is there a proposal or program?
8. How are environmental issues perceived and prioritized? Will it be necessary to develop a plan or record to achieve objectives in an efficient, comprehensive manner?

Comments

1. We believe it is important to optimize decision-making in a coordinated manner, taking into consideration all possible interests in order to achieve effectiveness and efficiency.
2. In practice, most people in non-professional settings are completely unaware of issues around climate change.
3. We must urgently optimize efforts in a coordinated manner, addressing diverse interests in order to be effective in raising funds and formulating policies!
4. It is important to work in a coordinated manner.
5. Compensations must be optimized.
6. It is difficult to join forces around the cause of taking action in response to climate change.
7. We need to speak in different languages and at different levels in order to promote an understanding of climate change.

Group 5

Questions

GENERAL

1. How aware are we that, according to two environmental advisors of the World Bank (2009),¹ 51% of the emissions worldwide contributing to climate change are due to industrial livestock production and agricultural practices that use genetically-modified seeds and pesticides? This should cause us to reflect upon the way we eat, and to opt for other alternatives that are more responsible in caring for nature, as our ancestors did.

FOR EVELIA RIVERA

1. As a public servant, can you tell us what government programs are being implemented for society's environmental benefit?
2. How can we increase the capacity for resilience among human communities affected or likely to be affected?

FOR ALBERT MILLER

1. How can one continue to divide up land ownership without dividing up the land?

¹ Robert Goodland and Jeff Anhang. Livestock and Climate Change. *World Watch* November/December 2009. <<http://www.worldwatch.org/files/pdf/Livestock%20and%20Climate%20Change.pdf>>.

FOR CARL SIDNEY

1. As an ethnic group, what has been your experience in terms of local organizing for governing your territory?
2. How have you managed to continue to follow an ancestral economic model in your community and in what percentage are you maintaining this tendency?

Group 6

Comments

1. There are numerous studies that document the health effects from exposure to chemicals: we must act (to reduce the use of toxic products).
2. It is possible that local problems are being widely ignored, and it is possible that local solutions are not receiving the respect they deserve. Both traditional practices and scientific knowledge are necessary.
3. Cross-border problems must be vigorously addressed, particularly those associated with shared water systems. Alternatives for the use of resources are needed for both countries involved.
4. One of the challenges is to listen to voices that have been hidden up until now, but that are choosing a path to move forward.

Questions

1. How can we increase local knowledge and participation? Some examples?
2. Is it time to harmonize land use plans at the local, regional and national levels? How can this be achieved from an ecosystem perspective that includes the oceans?
3. How can we get all levels of government and the community “on the same page?”

Group 9

Comment

1. Pressure from livestock production activities—which generate deforestation and fragmentation—is a real problem in Mexico, and this includes biosphere reserves such as Calakmul in Campeche and Los Tuxtlas in Veracruz.

Question

1. Are other pollutants included in the proposal presented that should be tracked, in addition to nitrogen and atrazine?

Group 10

Questions

1. How can general models for environmental measurements be adapted to the reality (in social, economic, political and environmental terms) in each community, with their particular characteristics?

2. How can we make the environmental issue, and particularly climate change, a cross-cutting and not sector-based issue in relation to public policies, and how can we assure that decision-making takes place at the sub-continental level (and that the decisions are respected)?
3. How can we assure that traditional ecological knowledge is integrated into strategies for confronting climate change, and that governments, scientists and institutions accept this knowledge as valid?

Comments

1. Energy-generating companies—which are important players in relation to climate change—are not present in this dialogue.
2. The importance of marine reserves as a tool for mitigation and resilience in response to climate change has been corroborated (article from Stanford University, COBI, A.C. and the *Cooperativa Pesquera de Isla Natividad* published in PLOS ONE).
3. The CEC must publicly express its position and assume a clearly-defined role in response to the water crisis and climate change.

Group 11

Questions

1. In the United States the initiatives associated with climate change affect industries. How have these industries been approached? Can you recommend anything to us that we might be able to apply in Mexico?
2. Is it necessary to impose capital accumulation above environmental conservation and sustainability?
3. Is it necessary to implement more actions in which civil society participates?
4. How can we turn proposals and actions in Mexico into a reality when the government isn't interested in even approaching polluters such as industries?
5. How could the CEC assist us in changing public policies in Mexico?
6. Why are communities ignored when their participation is necessary?
7. Why is awareness-raising in communities not granted the importance it deserves?

Group 12

Questions

1. How can we increase community awareness of the factors affecting the environment and provoking its vulnerability to dangers such as rising ocean levels?
2. How can we communicate the differences between effects from climate change and effects caused directly by local human action?

FOR BETSY

3. What would be required to expand the scope of the Enviro-Atlas to include all of North America?

FOR EVELIA RIVERA

4. What is the work plan for implementing a mitigation plan in response to climate change in Campeche?

Comment

1. It would be good to link the work of initiatives such as this workshop with the work of the National Climate Assessment in the US.

Presentation: Framework document for capacity building to improve the health of vulnerable communities in North America.

The CEC Program Manager for Air Quality and the Pollutant Release and Transfer Register (PRTR), Orlando Cabrera, presented a framework document for capacity building aimed at improving the health of vulnerable communities in North America. The objective of this document is to assist communities in identifying both possible health risks arising from environmental pollution and actions to mitigate such risks. The focus is to build the capacities of North American communities, primarily within vulnerable populations, such as children and indigenous communities. Trinational collaboration is required, through already-existing tools and sources, and with participation by interested individuals and organizations. The information resulting from the framework document for capacity building to improve the health of vulnerable communities in North America will be used to produce tools adapted to specific individuals and communities.

If you would like more information, please visit: www.slideshare.net/CECOnline/jpac-workshop-merida-presentation-from-cec-program-manager-orlando-cabrera-framework-document-to-improve-the-environmental-health-of-vulnerable-communities-across-north-america.

After the presentation, participants worked in teams to respond to four questions:

1. What are the most effective **opportunities and means** for distributing the framework document throughout North America?
2. What are the **potential applications** (tools, guidelines, etc.) of the strategic framework for improving environmental health in vulnerable communities?
3. What **tools** are needed to diminish human vulnerability to chemical pollution?
4. What **challenges** will likely present themselves **in the creation of these tools**?

The results were the following:

Opportunities and means

- Accompany these tools with a process that empowers people and benefits them economically.
- Use a multivariable, focalized strategy for dissemination.
- Analyze the type of recipients as well as their origin, culture, sector, etc.
- Resolve the problem of excessive information available, establishing criteria for:
 - selecting sources and reference documents,
 - defining “public” objective, and
 - selecting key stakeholders (*ejidos*, municipalities, etc.) for transmitting information.
- Establish increasingly local chains and strategies for dissemination.

- Provide specific information in line with the interests of communities.
- Translate information into national and indigenous languages.
- Provide incentives for implementation of projects.
- Identify successful social networks and stakeholders that can transmit the message regarding vulnerability and resilience.
- Prepare trainers and those responsible for dissemination.
- Develop a relationship with responsible companies so they will disseminate the message to other companies.
- Provide funding for the distribution of materials.
 - Through the North American Partnership for Environmental Community Action (NAPECA), offer small grants for adapting materials to specific local settings and for their distribution.
 - Explore possibilities with educational centers and universities for students to take the framework document to specific communities through their social service or field work, projects, theses, etc.
 - Establish agreements with public and private universities and educational systems.
- Take advantage of conferences and events that have their own participants and networks, to present the framework document. For example:
 - National Congress on Climate Change Research (*Congreso Nacional de Investigación en Cambio Climático*), UNAM.
 - Convention on Biological Diversity.
- Distribute the framework document among government authorities (in particular, disseminate it through their social and public health programs).
- Seek assistance from all three levels of government for this dissemination work.
 - Move horizontally through all the departments at the local level.
 - Move vertically through all levels: national, regional and state/provincial levels.
 - Make use of the websites of government entities.
- Disseminate the framework document with assistance from organizations in contact with communities and working in health, environmental and social areas.
- Seek support from labor and professional organizations.
- Identify and make use of social media such as internet, Facebook, YouTube.
- Explore possibilities in television through public service announcements, comics, programs.
- Look for opportunities in local television and radio, and in the press.
- Address children and youth, with simple language in materials such as:
 - coloring books,
 - interactive educational sites,
 - workshops.
- Organize community workshops, environmental education groups, online courses.
- Develop posters, brochures and informative newsletters.
- Develop applications (apps) for smart phones.

- Produce features for YouTube and television news programs.
- Seek out “ambassadors” such as actors, public opinion leaders, civic organizations.
- Seek support from parents’ organizations.
- Disseminate information on the concepts addressed in the framework document through:
 - brochures,
 - videos,
 - educational guidelines,
 - art (painting, music, theater).

Potential applications

- Diagnose problems and address them through public policies and planning.
- Participate in university activities, such as class projects, individual research projects, clinics, etc.
- Evaluate current policies and recommend reforms or modifications.
- Promote dialogue among interested individuals in communities, with the aim of reaching agreements and solutions.
- Create tools for empowerment: give communities the power to find their own solutions.
- Provide training to companies, institutions, government authorities.
- Identify risks.
- Generate new projects based on gaps in information.
- Identify communities in North America that are the most affected or vulnerable, or that have not benefitted from information in this regard.
- Make use of videos, traditional games, educational workshops.
- Organize informational visits and environmental-cultural campaigns.
- Address the issue of technological transfer.
- Advocate for capacity building.

Tools

- Assessment of risks: for example, freight trains that cross Canadian First Nations loaded with hazardous materials.
- Education and training.
- Examples of information: ways to measure the level of risk or danger through, for example, tables for categorizing risks.
- Ways of creating alternatives for high-risk substances or activities.
- Regulations.
- New technologies.
- Simple, non-technical language.
- Translation of academic language: explain complex terms or concepts in language that is accessible for the general public.

- Examples adapted to an everyday social context.
- Generation of information and knowledge.
- Trained personnel.
- Registry and monitoring (databases).
- Effective public policies.
- Creation and application of laws for different sectors.
- Channeling a percentage of revenue from fines paid by polluting companies, to allocate to social projects.
- Monitoring and sanctions to such companies.
- Companies' responsibility to dispose of their wastes.
- Political action for decision-making based on CEC report (political will).
- Conservation of natural areas, as ecosystems, and environmental services.
- Application of the three "Rs"—reduce, reuse and recycle—in policies on packaging.
- Citizen participation and oversight.

Challenges

- Influencing politicians and public policies.
- Transparency and access to government information.
- Intensive application of tools indicated in framework document.
- Political barriers, political pressure.
- The issue of confidentiality in companies.
- Mass advertising that sends conflicting messages; excessive consumption.
- Identifying those responsible for pollution, and identifying processes that intensify vulnerability.
- Access to programs and funds.
- Getting information and tools to marginalized communities.
- An economic model that insists on infinite growth on a finite planet.
- Availability of skilled human resources in local settings, to diagnose conditions indicating vulnerability, and to identify and promote the necessary community management for achieving an organized society with capacities in self-management.
- Lack of capacities in communities to participate in public policies, to promote them, modify them, etc.
- Developing technology for diagnosing conditions indicating vulnerability and for creating tools.
- Taking into consideration the cultural characteristics of communities and some of their barriers.
- Dissemination in the traditional languages of communities.
- Difficulty giving information a "community" health focus, especially given a conceptual framework that often focuses on "individual" health.
- Economic and political interests that are threatened by actions seeking to reduce vulnerability.

- Lack of resources for implementing projects.
- Corruption.
- Population's involvement on the basis of their convictions.
- Short-term thinking and a prevention-oriented focus.
- An excess of information, conceptual frameworks and methodologies; and a lack of evaluations that could help to make decisions.

Group exercise with tools for identifying vulnerable systems

The Program Manager for Terrestrial and Marine Ecosystems, Karen Richardson, presented some tools for mapping and identifying vulnerable systems (natural and human) and for estimating future change. These geomapping tools bring together spatial data with the objective of creating an atlas as a resource for communities and for decision-makers. Included is data that is important for identifying the vulnerability of systems, such as polluting industries, high-priority areas for grassland conservation, protected terrestrial areas, types of terrestrial cover and changes noted in recent years, plus annual CO₂ emissions, to name a few.

Participants worked with these mapping tools as a way to learn about their applications. The teams addressed three sample cases: 1) water scarcity in the Texas portion of the High Plains aquifer; 2) tourism development in Cancún, and 3) pollutants in the Columbia River Basin, on the basis of the following points:

- Geographic areas suffering numerous changes.
- Factors that generate changes.
- Factors that can already be measured, and factors for which data is still lacking.
- Diverse ways of integrating environmental stressors and conditions.
- Means for catching a glimpse of potential future conditions.

This exercise provided an initial opportunity to become familiar with these tools and begin to work with them. If you would like to see the Powerpoint presentation, visit: www.cec.org/Storage/142/16819_JPAC_presentation_Krichardson.pdf.

Next, the groups answered the following questions:

1. How can this data and information help to empower communities?
2. How can this data be used?
3. What are the different scales that should be considered in identifying vulnerable communities and ecosystems?
4. With a look to the future, what data will be needed to understand the new threats and to avoid unintended consequences?
5. What are some recommendations for making data accessible?

The results are presented below:

1. Empowering communities

- Develop a general idea of exposure to chemicals in housing and work environments; use a foundation of more detailed information in cause-effect relations between sources and environmental and health impacts, and identify direct connections with polluting facilities.
- Acquire awareness and knowledge.
- Learn how things are connected; for example, pollutants and water.
- Identify threats and flows: what risks are nearby? Upstream or downstream?
- Generate spaces for working toward local agreements, in order to make decisions appropriately.
- Try to make information accessible in both the way it is presented and the timing.
- Understand the implications and their impacts.
- Make inclusive decisions that lead to effective actions in conserving and managing resources, on the basis of consultations with members of communities and with support from legally-constituted councils.
- Make industries responsible for disposing of their wastes, and resolve problems arising in cooperation with the government.
- Assure that individuals have the necessary elements for participating in and influencing the development of their communities.
- Work hand-in-hand with communities.
- Develop effective tools for planning.
- Obtain the ecological history of rivers, natural spaces, etc. for analysis.
- Make it possible for communities to develop their own maps, even if technical assistance is required.
- Physically verify changes generated in their territories, and implications of such changes.
- Identify and quantify impacts over time.

2. Use of mapping data

- To assist in confronting misinformation or rumors within communities, and to promote understanding of issues through a science-based approach; to understand the magnitude of problems; to find other factors and other solutions.
- To establish networks and coalitions associated with the same issues.
- This data may be combined with community knowledge or other information (land use plans, specific habitats, abundance, scarcity indicators, and the supply for affected water basins, etc.).
- To provide the foundation for actions, and to take them to authorities and communities.
- For dissemination through the media.
- To urge authorities to make prevention-oriented decisions.
- For increasing the population's awareness of possible risks.
- To consider in territorial ordering and development planning.
- For identifying problems.
- For making decisions.

- To use existing data and maps in local mapping.
- To validate local knowledge.
- To establish geographic areas of interest.
- To concentrate support in ten priority areas, for creating an intervention model.
- To identify the necessary participants on the basis of political jurisdictions.
- To provoke questions: What is happening? What is this? What caused this?
- To quantify externalities and to conduct cost-benefit analysis for decision-making that will benefit communities.
- To model and project future scenarios.

3. Scales for identifying vulnerable communities and ecosystems

- Scales may be national, regional, state, municipal or local.
- All scales are necessary: sometimes we need to see close-up, and sometimes we need to see the big picture.
- There is a need for a scale that, depending on the objective, considers regional and local basins and also aquifers.
- Another scale: for identifying inter-state or international matters that affect communities.
- The examination scale should correspond to the scale of problems; some matters are multi-scale.
- A regional scale may be used for identifying critical zones.
- Smaller scales should be adopted for each community.
- Data that links current damages with original states; it is important to be very visual.
- Rates of change should correspond to the scale: if the rate is high, the scale should also be high; if the rate is low, the scale should also be low.

4. Data necessary for understanding new threats and preventing consequences

- Data that assists in modeling and creating potential scenarios, considering the time scale on which problems are formulated.
- A multi-variable, focalized strategy.
- Maps of strategic natural resources, such as water.
- Prospects of phenomena such as climate change and rising ocean levels.
- Review of information for creating future models.
- Collection of data, on water availability, filtration, dredging...
- Social perception.
- Demographic data and its projections.
- Economic and social activities of individuals.
- Natural resources.
- Climate information.
- Natural risks and threats.

- Georeferencing of human use, productive practices and land use.
- Information on population growth, including socioeconomic and environmental indicators that will be affected.

5. Recommendations for making data accessible

- NAPECA Initiative, social services organizations, small donations to students.
- Dialogue with targeted sectors, whether communities or governments, to identify interests and develop improved formats.
- Access to these tools is an important issue: for example, whether or not there is internet or other media for access; whether experience for understanding or using data is lacking; if educational level is very low.
- Identify where interested individuals may go to obtain more information, experience or technical assistance.
- Digital maps.
- Mobile devices.
- Google Earth video-tours.
- Accessibility: not restricting information without justification.
- Capacity building and strengthening in municipal settings.
- Information easy to understand.
- Cooperation agreements with other countries.
- Teach people to use information.
- Making scale models to help target communities develop a better (interactive) understanding.
- Capacity building in communities for interpreting and making decisions on the basis of data.
- System for monitoring over time, for updating maps.
- Define polluting sources, more information.
- In accordance with specific situations, providing information to those responsible for making decisions, and pressuring for the correct application of such information for the benefit of communities.

Workshop Activities: Friday, 14 December 2012

The second day was dedicated to generating proposals for actions to reduce ecosystem vulnerability and to diminish risks for communities dependent upon or inhabiting those ecosystems. Once again, work groups were organized, with each one formulating a proposal for action to be carried out by citizens and local and federal governments. These efforts were based on the following premise.

Action proposals

Work groups focused on identifying five proposals for actions aimed at diminishing ecosystem vulnerability and addressing community needs, to be carried out by:

- a) Ministries (through JPAC)
- b) Local governments

c) Citizens

The proposals for these three sectors are described in detail below:

Ministries

Legislative actions

- Strengthen laws and regulations on environmental protection and to renegotiate the rights of investors; also, to incorporate the environment when negotiating positions.
- Grant legal power to environmental inspectors.

Political actions

- Increase taxes paid by the industries that provoke damages, and designate this revenue for enhancing sustainability.
- Assure compliance with free trade agreements. Investment does not diminish the vulnerability of local communities.
- Link objectives of UN-REDD program and the CEC.
- Integrate policies from energy, economic, environmental, health and water sectors.
- Acknowledge health effects from environmental problems and socioeconomic inequality in development strategies.
- Increase the budget for initiatives such as the North American Partnership for Environmental Community Action (NAPECA).
- Federal government should promote better principles for local planning.
- Regional centers (North America) for applied science and dissemination.
- More tools for promoting resilience.
- Formulate public policies that will lead to urgently needed changes in production and consumption habits.
- Provide grants linked to the pilot framework document for promoting its use through case studies.
- That ministers agree upon joint actions in response to climate change on the basis of a North American agreement. That progress be reported at CEC's 20th anniversary (in 2014).
- Reduce poverty and its causes. The most vulnerable groups are those consistently at a disadvantage.
- Increase the number of environmental inspectors.
- Establish zones where genetically modified organisms are prohibited.
- Provide better information on the labeling of imported products (genetically modified organisms, pesticides).

Organizational actions

- Promote networks or organizations of vulnerable communities for working to exert influence in the political sphere.
Dissemination of information on legal aspects in vulnerable communities and on their rights.

- Open up a dialogue and establish links between health and environment authorities.
- Support (financially) a Youth Conference in which young people can present their proposals and receive training for communicating them to others.
- Promote sustainable food security through traditional knowledge.
- Create jobs and alternatives for generating income through sustainable activities.
- Identify those with traditional knowledge in the three countries.

Ecosystem actions

- Conserve natural ecosystems and their functions; prevent their deterioration and promote their recuperation as fundamental elements in reducing communities' vulnerability.
- Create advertising campaigns that are useful, practical and effective in promoting sustainable management of ecosystems.
- Formulate strategies for local development from an ecosystem, ecoregional perspective.
- Promote responsible sound management of vulnerable ecosystems with justice and equal opportunities.
- Standardize and communicate the concept of ecosystem and its implications.

Pollution actions

- Place a serious focus on the repercussions of problems in oceans for migratory species, as well as for marine fish affected by our shared polluted seas.
- Improve mechanisms for oversight, inspection and sanctions, so that companies and governments will genuinely take responsibility when there are cases of contamination.
- Relocate industries, and remove the sale and distribution of toxic products from urban areas.
- Impose regulations, compliance and taxes for toxic chemicals and fumigating equipment including small airplanes.
- Intensify efforts to reduce the use of toxic products and develop regulations for replacing them with other alternatives.

Trilateral actions

- Combine actions in response to cross-border risks and effects, and shared resources.
- Review environmental policies in Canada, the United States and Mexico. Are they harmonized?
- Assure that companies take responsibility for applying the same standards (in health, security, the environment) in the three countries.

Local governments

Legislative actions

- Formulate and apply laws for conserving and protecting coastal areas.
- Establish a federal environmental tribunal in Mexico that functions independently of the Office of the Federal Attorney for Environmental Protection (*Procuraduría Federal de Protección al Ambiente*—Profepa).

Political actions

- Create programs for providing small donations to vulnerable communities.
- Intensify efforts to reduce the use of toxic products, and promote regulations for replacing them with other alternatives.
- Regional government: create incentives for land use that promotes sustainability in a period of five years.
- In five years: local governments should review and formulate plans for land use that adheres to the CEC framework.
- Make a commitment to sustainable development through (long-term) planned growth.
- In the short term (two years): local governments will review land use plans in relation to CEC's framework document and will identify gaps.
- Open up a dialogue and create links between government offices responsible for the areas of health and the environment.
- Manage sanitary landfills in a sustainable manner.
- Implement programs for payments for environmental services and seek funding.
- Conduct research studies to analyze social networks in local communities.
- Formulate public policies that involve respect for fragile ecosystems and adaptable infrastructure.
- Implement public policies aimed at promoting ancestral agricultural and traditional medicinal practices in indigenous communities.
- Strengthen the operation of current citizen councils associated with the Ministry of the Environment and Natural Resources (*Secretaría de Medio Ambiente y Recursos Naturales*—Semarnat) and the Ministry of Agriculture, Stockbreeding, Rural Development, Fisheries and Food (*Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación*—Sagarpa), and establish communication links with the JPAC, since the three spheres of government and organized civil society participate in these councils.
- Restrict and regulate the use of chemicals that endanger the health of biodiversity and the human species.

Organizational actions

- Assist the organizational capacity of vulnerable communities in an appropriate, sustained manner, to help them confront their own vulnerability.
- Construct green buildings and infrastructure, and promote activities designed to diminish consumerism.
- Create environmental “brigades” in vulnerable communities with assistance from citizen organizations and local governments.
- Information on water use and management.
- Initiate programs for managing and recycling trash.
- Assure that local activities do not negatively impact vulnerable communities or their neighbors.
- Identify vulnerable communities and provide them with information regarding ways they can take their own actions.

- Reject monoculture.
- Create state-level data systems and maps with vulnerable communities and ecosystems.
- Regional (state) centers for applied science and dissemination, and the creation of networks.
- Promote regional youth conferences to give them the opportunity to present their proposals and receive training on environmental topics (sustainability).
- Identify those who have traditional knowledge in the different states and organize a meeting for exchanging experiences and presenting these individuals.
- Environmental education for youth and children.
- Organize forums for public consultations.
- Place renewed value on natural resources in communities.
- Formulate policies that will provide environmental information to all social groups, through open dialogue, through social networks or through workshops and other activities.
- Bring together the organized civil society, universities and research institutes in communities.
- Identify and provide training to community leaders.
- Sister cities in environmental aspects.

Citizens

Individual actions

- Reduce exposure to advertising.
- Participate in organizations, become informed, and become an agent of change in your circle of influence.
- Buy local, sustainable products and services.
- Participate in conferences to receive training and generate ideas and solutions.
- Know your surroundings and identify vulnerable areas.
- Use and manage resources in a responsible manner.
- Monitor compliance with proposals.
- Promote the shared use of cars, and use bicycles and public transportation.
- Create urban vegetable gardens, and compost wastes. Plant trees.
- Save water and energy. Choose energy-saving appliances.

Collective actions

- Academics: calculate the cost of inaction in environmental, economic and health over a period of two to five years.
- Improve agricultural practices (eliminate genetically-modified organisms) by using natural fertilizers and pesticides.
- Spread the information you have, and encourage behavioral changes in the community.
- Participate in collecting data for scientific research with citizen science schemes and crowd sourcing.

- Provide incentives for citizen education through committees for attending to vulnerability through specific efforts in the region.
- Create committees or opportunities for reaching agreements in order to implement joint local actions (government and society) for reducing vulnerability and promoting sustainable development (three levels).
- Practice social and environmental justice; provide follow-up to implementation and compliance with justice.
- Seek assistance from organizations in communities (rotary clubs, churches).
- Organize and promote corrective and preventative actions.
- Create economic incentives for companies that implement sustainable environmental practices.
- In short: we need to act now!

Recommendations for JPAC to serve as a bridge and to represent communities and citizens

Policies

- Promote and create tripartite alliances of environmental educators and provide teachers with high-quality materials.
- Insist that political terms be changed in the agenda; what is involved here is the source for continuity through political opportunities.
- Seek funding for programs that provide assistance for community members and for student participation.
- The CEC needs to expand its action plan on climate change; improve its management of greenhouse effect gases; and contribute to greater resilience of communities and ecosystems.
- Request more economic assistance.
- The CEC should be made known through federal authorities.

Dissemination

- Prepare printed documents.
- If environmental legislation is genuinely implemented and complied with, vulnerability will be reduced; CEC could cooperate and contribute by disseminating information.
- JPAC members could present the CEC to their own organizations (and others in civil society), so that the Council's link with the Commission and its activities is clearly identified.
- JPAC can also develop visual educational material and provide it to the appropriate centers for dissemination.
- Improve communication and dissemination of information regarding the JPAC and its work through an informative newsletter sent to citizens and institutions (who will in turn inform their communities).

Organization

- Establish personal and professional relations in which local governments are offered assistance based on solid scientific knowledge. Time will be required to build trust and cooperation.

- Create links with other organizations.
- Open regional offices responsible for carrying out the organization's objectives and local objectives.
- Improve communication and keep it ongoing.
- Collect information and input from meetings with various environmental sectors and put together a document for the Secretaries.

Recommendations for communication to other agents and sectors

Mass media

- Increase participation by mass media in JPAC meetings.
- Target specific communities of users when disseminating information by internet.
- Add a participative mechanism for casting votes on the CEC website, to facilitate participation in key topics.
- Find logistical solutions that make it possible to be more inclusive. Online meetings.
- Invite communication media.
- Use various communication media (print and electronic) for disseminating information regarding events and their outcomes.
- All participants in these meetings should promise to disseminate information regarding the JPAC and the CEC, within their possibilities. The CEC can provide a package of information to organizations interested in disseminating such information on their website.
- Use YouTube to present successful experiences to the general public.
- Share information by way of television and other communication media.

Other media

- Establish contacts with universities so they can disseminate information at the local level.
- Identify representatives in each region to participate in meetings.
- Use long-distance communication.
- Ask civic organizations (beneficiaries of the NAPECA initiative) to communicate JPAC's actions (maps...) to their associates in the communities.
- Promote CEC activities through government communication media (at the three levels).
- Select a representative to network and communicate with workshop members.
- Disseminate conclusions from each workshop.
- Create networks or links among members of society to make it possible to disseminate information.
- Create a database with workshop members for exchanging information.
- Use local communication media for disseminating information regarding JPAC's work.
- JPAC should participate in important meetings and plenary sessions of councils and organizations established by the population, and should assure that JPAC members hold all the meetings necessary for maintaining ongoing communication.

- The CEC and JPAC should establish clear messages that truly reach other sectors.
- Share information with work colleagues and universities.

Policies

- Take advantage of the 20th anniversary [of the CEC] to identify its friends and followers, and to consider the possibility of renewing the structure and focus of the North American Agreement on Environmental Cooperation (NAAEC) to assign greater responsibilities.
- Invest in communication.

Ideas for future workshops

Dissemination

- Improve the process of publicizing events.
- Organize simultaneous, linked workshops in different places, with the aim of diversifying and sharing ideas.
- Invite spokespersons from local communities (for example, Albert Cail) to attend meetings.
- Formulate solutions by region, and thus consider the possibility of holding more than one workshop. Ways to reduce costs may be explored with support from state or provincial governments.
- Request copies of the videos of events, for their dissemination.
- As soon as new contacts have been obtained, distribute them.
- The five representatives from each country serving on the Joint Advisory Public Council should attend the workshops.

Organization

- Exactly how effective and efficient is this organization, the CEC? Has it changed, taking into consideration the government that was in power when it was created?
- Include more personnel in community spheres.
- Take care to assure that contributions by participants, leaders and facilitators are acknowledged.
- Strengthen the development of systems consistent with the data and maps of the vulnerable communities and ecosystems that have been identified as high priorities for the CEC.
- Call for ideas that are more clear and realistic.
- Consider the possibility that JPAC organizes its next meeting in a community or with exclusively local stakeholders (without environmental experts).
- Workshops should allow more time for discussion. Avoid scheduling them on holidays.
- Invite indigenous communities.
- JPAC can seek participants directly from communities.
- Make the concepts analyzed highly visible in participants' work centers.
- Hold next workshop in a natural setting, in harmony with nature.

- Seek support from already-established citizen councils, such as the Advisory Council for Sustainable Development in Mexico (*Consejo Consultivo para Desarrollo Sostenible de México*).
- Achieve personal commitments.
- Work to have leaders from associated spheres in attendance.

Topics

- Is the important commitment made 20 years ago, when things were simpler, still the same commitment needed today?
- Address other more diverse topics.

In this point emphasis was placed on how important it is that the proposals obtained from the workshop actually reach the corresponding authorities. Also, the role of JPAC representatives was highlighted, as a fundamental link with the government.

Workshop Conclusions and Closing

The participating public, JPAC representatives and workshop facilitator agreed that the three objectives initially proposed for the workshop were fully met. It was a very productive meeting, in which excellent ideas were generated, together with a spirit of collaboration and commitment to shared efforts. Participating in the groups were individuals from numerous communities from the three countries, and they contributed their experiences and knowledge in different areas, as well as their multiple, enriching life paths, for a multicultural perspective with a shared goal: to reduce ecosystem and community vulnerability in North America to the effects of climate change. The current challenge is to continue the networking given an impulse through the workshop, and respond to the invitation to maintain an open dialogue in the weeks and months following the event.

After an update on JPAC work and some administrative matters, and following reports presented by representatives of national and governmental advisory committees (NAC and GAC), David Angus, President of the Winnipeg Chamber of Commerce, was announced as the new JPAC Chair for 2013. Lastly, sincere appreciation was expressed to all the participants, and the workshop was concluded, formally closing JPAC's Ordinary Session 12-03.

Annex: Workshop Photos



Welcoming words from CEC Executive Director Irasema Coronado



Participation by Elizabeth Smith



Presentation by Evelia Rivera Arriaga



Dialogue between panelists and the public. Evelia Rivera, Carl Sidney and Elizabeth Smith



Working groups in action



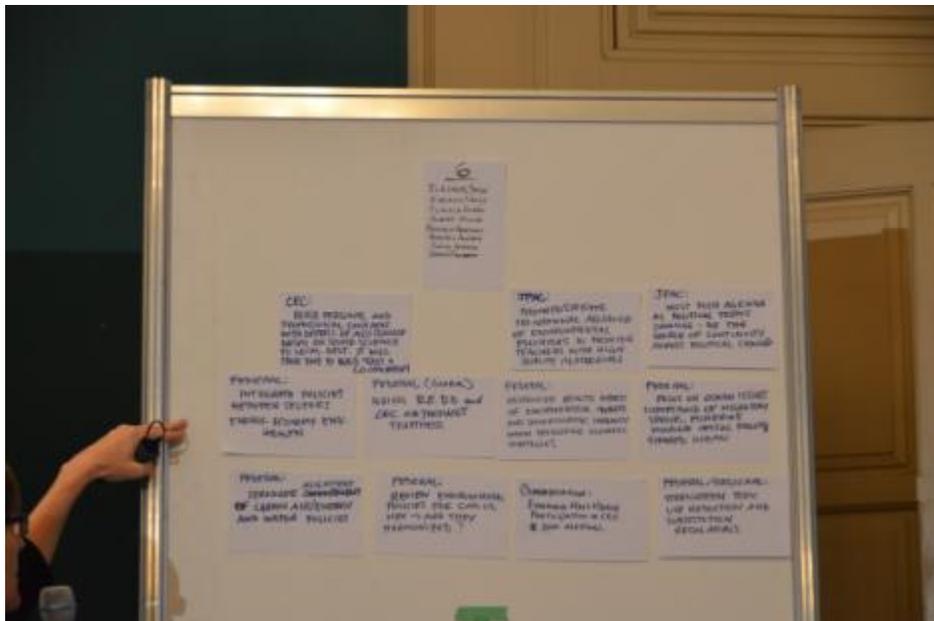
Writing down proposals for framework document



Presentation of mapping tools



Working with mapping tools to identify vulnerable systems



Presentation of results



Closing words and announcement of new JPAC Chair, David Angus

Joint Public Advisory Committee (JPAC) Regular Session 12-03 and Workshop

“Reducing Ecosystem Vulnerability, Responding to Community Needs: Tools and Information for North American Action”

Mérida, Yucatán, México
13–14 December 2012

List of participants as of 20 December 2012

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